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Studies in the Botany of the Southeastern United States.—XV.

BY JOHN K. SMALL.

I. NOTEWORTHY SPECIES.

SMILAX MORONGII.

Smilax megacarpa Morong, Bull. Torr. Club, **21**: 434. 1894.

The specific name under which this characteristic plant was first described was preoccupied* at the time of its publication. Henceforth the species may be designated by the name of the original describer.

BAPTISIA MEGACARPA Chapm.; T. & G. Fl. N. A. **1**: 376. 1838.

During the summer of 1895, I found this local species abundantly scattered through swamps of the Flint River below Albany, Georgia. The plants there continued to flower after they had produced mature fruit. The trees forming the woods of the part of the river swamp in which this *Baptisia* grew were almost exclusively magnificent specimens of *Acer Floridanum*.

EUPHORBIA APOCYNIFOLIA Small, Bull. Torr. Club, **25**: 467. S. 10, 1898.

Euphorbia corollata, *θ apocynifolia* Millspaugh, Bot. Gaz. **26**: 268. O. 15, 1898.

Since the publication of this species excellent specimens have reached the herbarium of the New York Botanical Garden, through the National Museum. They were collected at Meridian, Mississippi, on October 10, 1896, by Mr. Charles Schuchert. They are almost exactly like the type and possess all the characters that separate the species so obviously and abundantly from its relatives.

CEANOTHUS SERPYLLIFOLIUS Nutt. Gen. **1**: 154. 1818.

In the latest interpretation† of this species the author cites a single collection, the original. The species was first collected by

*A. DC. in DC. Monog. Phaner. **1**: 186.

† Syn. Fl. N. A. **1**: Part 1. Fascicle 2, 410. 1897.

Dr. Baldwin, near St. Mary's, in southeastern Georgia, in the early part of this century. As far as I can learn the species was not met with in the field since the time of the original collection, until Mr. Lewton found handsome specimens of it about Lake Brantley, Orange County, Florida, on July 10, 1894. It is interesting to get the species from a point several hundred miles south of the original station.

SIDA RUBROMARGINATA Nash, Bull. Torr. Club, **23**:102. 1896.

This excellent species was collected many years ago by Rugel. I find a specimen of it in the Columbia University Herbarium, the label bearing the following record: Ad vis, prope Tallahassee, Florida, legit Rugel, Mai, 1843.

CROTONOPSIS SPINOSA Nash, Bull. Torr. Club, **22**:157. 1895.

Mr. Lewton found this lately described species abundant in Orange County, Florida, during the summer of 1894. This collection makes the fourth known locality for the species.

CITRULLUS CITRULLUS (L.).

Cucurbita Citrullus L. Sp. Pl. 1010. 1753.

Citrullus vulgaris Schrad. Linnaea, **12**:412. 1838.

This foreign and widely cultivated species has now become sufficiently well established in waste grounds, along railroads and in similar places to be recognized as a part of our introduced flora. I have collected it at many points in Georgia and North Carolina.

II. HITHERTO UNDESCRIBED SPECIES.

MELANTHIUM DISPERSUM.

Perennial, glabrate below the inflorescence. Stems erect, 6-12 dm. tall, simple below the panicle, thence zigzag and scurfy pubescent, rather slender: leaves without distinction between blade and petiole, narrowly linear, elongated, 3-8 dm. long, sheathing the stem for several centimeters: panicle ample, open; branches zigzag, widely ascending or spreading: bracts 3-10 cm. long, obtuse: pedicels spreading, 8-12 mm. long, rigid: perianth scurfy without, 12-15 mm. broad; segments thickish; blades oblong, obtuse, with 2 glands at the bases, entire, several times longer than the claws: capsules (barely mature) ovoid, 7-9 mm. long.

In woods, western Florida, summer.

Near to *Melanthium Virginicum* but with a different aspect, the leaves are longer and narrower and the panicle, instead of being narrow and with an elongated central axis, is broad, with few corymbosely arranged widely ascending branches and no prolonged main axis. On comparing *Melanthium dispersum* with specimens of *Melanthium Virginicum* from Florida and the Northern States, in addition to the above cited characters, we find the pedicels to be much stouter, and much more widely separated, the flowers less crowded, there being only about one half as many to each panicle and the segments of the perianth with shorter claws.

The specimens on which the species is based were collected by Mr. A. H. Curtiss in Walton county, Florida, in 1885.

SMILAX TENUIS.

Perennial, unarmed. Stems herbaceous, elongated, apparently 1 meter long or longer, commonly simple, slender, glabrous: leaves rather few; blades thin, triangular-ovate, 5-9 cm. long, acuminate, coarsely erose-denticulate, 5-nerved, with an inconspicuous sprinkling of minute hairs beneath, truncate at the base: petioles slender, as long as the blades or shorter: tendrils few, filiform, sometimes developed from the sheaths of the upper leaves: peduncles as long as the subtending leaves or longer, nearly filiform: pedicels (staminate) 15-25, 6-8 mm. long: perianth greenish; segments oblong or linear-oblong, 2.5 mm. long: filaments barely twice as long as the anthers.

In woods, Louisiana. Spring.

The nearest described relative of *Smilax tenuis* is *Smilax peduncularis*, but the two species differ conspicuously in habit, the former is quite robust while the latter is very slender. The triangular-ovate leaf blades with their truncate bases and delicate nerves form a strong contrast with the larger, broader and thicker leaf blades of *Smilax peduncularis*, with their cordate bases and very stout prominent and more numerous nerves. The perianth of the newly described species is barely one half as large as that of its relative. The original specimens were collected by Dr. Hale, many years ago in Louisiana.

SMILAX DIVERSIFOLIA.

Perennial, unarmed. Stems herbaceous, 1-3 meters long, climbing, simple or sparingly branched, purplish: leaves numerous; blades

ovate or oval-ovate except those accompanying the peduncles, 3–5 cm. long, tipped with an abrupt slightly twisted point, dark green above, pale and minutely pubescent on the nerves and veins beneath, prominently 3-nerved and usually with 2 more indistinct nerves, truncate or subcordate at the base; blades of leaves accompanying the peduncles lanceolate, acuminate: petioles slender, one third to one half as long as the blades: tendrils filiform, developed at the majority of the nodes: peduncles stout, twice or thrice as long as the leaves: pedicels (pistillate) 20–25, 8–10 mm. long, slightly thickened upward: berries subglobose, about 5 mm. in diameter.

In river swamps, Georgia. Spring.

During the spring of 1895, I discovered a curious species of *Smilax* growing in the river swamps of southwestern Georgia, especially in the swamps along the Flint river. It is related to *Smilax herbacea*, but it is more slender and delicate. The leaves are characteristic, the blades are much smaller and more rounded except those accompanying the peduncles; these are wholly different in shape from the other leaf-blades, being lanceolate or narrowly lanceolate. The peduncles are conspicuously elongated and fully twice as long as the accompanying leaves. The original specimens were collected by the writer along the Flint river near Albany, Georgia, May 24–28, 1895.

SMILAX RENIFOLIA.

Perennial, shrubby, glabrous. Rootstocks not seen: stems elongated, climbing high over shrubs and trees, more or less distinctly angled: leaves numerous; blades reniform or deltoid-reniform, 3–7 cm. long, resembling those of *Celtis*, rounded and mucronate at the apex, entire, mostly broader than long, subcordate at the base: petioles 5–10 mm. long; stipular sheath fully half as long as the petioles, usually furnished with tendrils: peduncles of pistillate plants 10–20 mm. long, flattened, much longer than the petioles: pedicels 16–25, 2–3 mm. long: perianth greenish; segments linear or linear-oblong, 2 mm. long, acutish: berries black, subglobose.

Along streams, Texas. Spring.

This Texan *Smilax* is remarkable for its broad *Celtis*-like leaf-blades. These alone furnish a ready means of separating it from *Smilax rotundifolia* with which it has been confused.

The specimens from which the above description is taken were

collected by Mr. A. A. Heller along Bear Creek, Kerr county, Texas, on April 30, 1894, no. 1679.

SMILAX CINNAMOMIFOLIA.

Perennial, glabrous. Stems high-climbing, sometimes 10-15 meters long, sparingly armed with slender spines, terete or nearly so: leaves alternate; blades lanceolate or ovate-lanceolate, those on vigorous shoots ample, normally 7-10 cm. long, acute or apiculate, entire, glaucous beneath, cuneate to truncate at the base: petioles 5-10 mm. long; stipular sheath about half as long as the petioles, usually furnished with tendrils: peduncles much longer than the petioles, slender, sometimes 4-5 cm. long at maturity: pedicels 5-10, 6-12 mm. long: perianth greenish; segments linear-oblong or slightly broadened upward, 4 mm. long: anthers mostly longer than the filaments: berries subglobose, about 10 mm. in diameter, bluish-black, lustrous under the glaucous coating.

In woods and rich soil, Alabama and Western Florida to Texas. Spring.

Smilax cinnamomifolia is a southern homologue of *Smilax glauca*, which species it resembles in habit. The leaf-blades are narrower, at maturity often resembling those of *Smilax lanceolata* and suggesting leaves of species of *Cinnamomum*. The upper surface is much more lustrous than that of the leaf-blades of *Smilax glauca* and the berries conspicuously large, commonly twice the size of those of *Smilax glauca*. The following specimens belong here:

Arkansas: Spirit Lake, Texarkana, *Heller*, no. 4109.

Alabama: Auburn, Lee County, November, 1895, *Underwood*.

GYROSTACHYS CONSTRICTA.

Perennial from coarse roots. Stems erect, 3-4 cm. tall, stout, simple: leaves mainly on the lower part of the stem, these linear or narrowly linear-spatulate, 1-2 dm. long, acute, narrowed into margined petioles; those higher up on the stem reduced to sheathing scales: spikes 5-10 cm. long, 2-2.5 cm. thick, closely flowered: bracts lanceolate, as long as the flowers or shorter, acuminate: lip 7-10 mm. long, nearly as long as the sepals and petals, constricted above the middle tip; ovate or deltoid-ovate, much shorter than the base; base ovate, with 2 more or less incurved basal callosities.

In marshes, Louisiana. Fall.

A distinct species related to *Gyrostachys vernalis* but more robust and larger in all its parts. The leaf-blades are much broader and the dilated tip of the lip ovate with a more or less strongly truncate base as compared with the oval or suborbicular tip of the lip in *Gyrostachys vernalis*. The original specimens were collected by Dr. Hale in marshes, Louisiana, no. 444. There is a specimen of this species in Dr. Torrey's herbarium, collected by Prof. L. C. Beck, but no locality is given on the label.

GYROSTACHYS REVERCHONII.

Perennial, light green, 3–6 dm. tall: leaves few; blades various, those of the basal and lower stem leaves linear or slightly broadened upwards; those of upper stem-leaves linear, 1–2 dm. long, acute or acuminate, reduced to sheathing bracts high up on the stem: spike long, about 1.5 cm. thick: bracts often as long as the flowers: perianth whitish; lateral sepals free, acutish; petals obtuse: lip rhombic ovate, 6 mm. long, obtuse, surpassed by the sepals and perianth, slightly crisped near the apex: callosities stout, slightly curved, pubescent at the base.

On damp prairies, Louisiana and Texas. June.

Gyrostachys Reverchonii is the Texan homologue of *Gyrostachys brevifolia*. The two species are related by the rhombic-ovate lip which is common to both. The Texan species is more robust than *Gyrostachys brevifolia* and its stem is more leafy. The following specimens should be referred here:

Texas: Prairies, Lancaster, Dallas County, June, *Reverchon* [Curtiss, N. A. Plants, no. 2788*].

Louisiana: Damp places, May. *Hale*.

GYROSTACHYS TRILOBA.

Perennial from several cord-like roots. Stems erect, 3–5 dm. tall, slender, sometimes rather weak: leaves mainly near the base of the stem, these oblong or elliptic-oblong, 3–8 cm. long, acute, sheathing at the base, upper stem-leaves reduced to sheathing scales: spikes 4–8 cm. long, about 1.5 cm. thick: bracts lanceolate acuminate, shorter than the flowers: lip oblong, 6 mm. long, about equaling the sepals and petals in length, recurved and 3-lobed at the tip, crisped throughout, cordate with 2 basal callosities.

In sand, Fort Meyer, Florida. Winter.

The species here described bears but little resemblance to any

of its relatives, differing considerably in aspect by the oblong or elliptic-oblong leaf-blades. However, the crucial character that separates it from all of its relatives is the three-lobed lip. The original specimens were collected by Mr. J. H. Simpson, at Fort Meyer, Florida, December 11, 1891, no. 368.

OXALIS HIRSUTICAULIS.

Perennial from horizontal rootstock, bright green. Stems erect, 1–2 dm. tall, simple or nearly so, stout, densely hirsute, scaly at base: leaves rather numerous; petioles usually 4–10 cm. long, villous-hirsute: leaflets 3, strigillose or glabrate in age, 1–1.5 cm. long, sharply notched, thickish; peduncles erect or nearly so, surpassing the subtending leaves, pubescent like the petioles, topped by umbel-like cymes: pedicels usually 2, 1.5–2 cm. long, subtended by narrow bracts: sepals 5–6 mm. long, various; outer oblong, inner linear-oblong, all ciliate, thin, obtuse: petals golden yellow, 1.5–2 cm. long, glabrous throughout: filaments pubescent: styles villous-hirsute: capsules columnar, about 1 cm. long: seeds 1.5 mm. long, with low, transverse ridges.

In open woods, near Nashville, Tennessee.

For several years I have hesitated to publish this excellent species although to thrust it into any of the species to which it is related does violence to the clear lines separating those species from one another. On the one hand it is related to *Oxalis macrantha*, but differs in its upright habit and the copious spreading pubescence, on the other hand it can be compared with *Oxalis recurva*, but it is very much more robust, its pubescence is of a hirsute type rather than villous, then, too, the inflorescence does not conspicuously surpass the leaves and the styles are not recurved in the characteristic manner in which those of *Oxalis recurva* are.

The original specimens were collected by Dr. A. Gattinger in the vicinity of Nashville, Tennessee. Besides specimens in the Herbarium of Columbia University I have had the use of ample specimens from the Herbarium of the University of Tennessee, through Professor S. M. Bain.

OXALIS BUSHII.

Perennial by horizontal rootstocks, bright green. Stems erect, 1–2 dm. tall, nearly simple, pubescent with spreading hairs: leaves

few; petioles slender, pubescent near their bases like the stem; leaflets 3, 1–1.5 cm. long, sharply notched, strigose or glabrate: peduncles slender, nearly erect, solitary or usually so, overtopping the leaves, glabrous except near the base, topped by umbel-like cymes in which 1 or 2 flowers mature at a time; these accompanied by several drooping buds: pedicels appressed pubescent: sepals oblong, 3.5–4 mm. long, obtuse, ciliolate: petals light yellow, 8–10 mm. long, emarginate or rounded at the apex: filaments much dilated at the base: styles slightly pubescent: capsules not seen.

In dry soil, Missouri and Arkansas. Spring and summer.

As in the case of *Oxalis hirsuticaulis*, I have hesitated several years before publishing the above described species in the hope that some other solution of the problem of its disposal might present itself. The species is so distinct that it is impossible to include it under any species thus far described. *Oxalis recurva* is its nearest relative and it somewhat resembles that species in its young stage, but it is much more fleshy and the stems are not tufted on the rootstocks. The short obtuse sepals and the pale yellow corollas form quite a contrast with the fully thrice larger golden-yellow corollas of *Oxalis recurva*.

The original specimens were collected by Mr. B. F. Bush in Jackson County, Missouri, June 28, 1893, no. 30.

OXALIS PRICEAE.

Perennial from slender creeping rootstocks. Upper part of the stem, petioles, peduncles and pedicels pubescent with very delicate spreading hairs. Stems erect, soon becoming decumbent, 1–3 dm. long, wire-like, more or less branched: leaflets 3, digitate, obcordate, deep green above, pale or glaucescent beneath, 6–9 mm. long, ciliate: peduncles slightly longer than the petioles or shorter, pedicels about as long as the corolla, deflexed at maturity: sepals linear or nearly so, 7 mm. long, pubescent at the base and the tip: petals deep yellow chrome, about 1.5 cm. long, finely pubescent without, ciliate, rounded or truncate at the apex: styles (in plants examined) 6–7 mm. long, densely villous: capsule columnar, 10–15 mm. long.

In open woods, middle Kentucky. Summer and fall.

A remarkable species related to *Oxalis recurva* and *Oxalis macracantha*. It resembles the latter species in habit and in the color of the foliage, and like it, the inflorescence is not elevated

above the leaves, but the pubescence is spreading. The pubescence is similar to that of *Oxalis recurva* but much more delicate, the flowers too resemble those of that species in aspect, but the styles are erect. The most peculiar character is the pubescent and strongly ciliate petals. I do not know that this character exists in any of our many yellow-flowered species. Miss Sadie F. Price, for whom this *Oxalis* is named, has furnished me with copious material from near Bowling Green where she has observed this and other interesting species in the field for several years.

PHYSOSTEGIA DIGITALIS.

Perennial, glabrous below the inflorescence. Stems erect, 7–12 dm. tall, stout, sharply 4-angled: leaves opposite; blades leathery oblong to elliptic-oblong, 10–22 cm. long, acute or acutish at the apex, undulate or repand-serrate above the middle, sessile and partly clasping at the base: racemes simple or branched, finely pubescent: bracts lanceolate or ovate-lanceolate, 4–6 mm. long: pedicels very short: calices 8–10 mm. long; tubes turbinate or cylindric-turbinate; segments lanceolate, acuminate, about one half as long as the tube: corollas barely puberulent along the back, 2–2.5 cm. long; tube rather abruptly dilated into the throat; lower lip spreading, lobes oblong, middle one emarginate, about twice as large as the lateral ones; upper lip slightly undulate.

In low grounds, Louisiana. Summer and fall.

Few specimens of this species have reached our herbaria. The plants are more robust than those of *Physostegia Virginiana* and the large broad entire or merely repand-toothed leaf-blades form a conspicuous contrast with those of the common species. A comparison of the flowers of the two species under consideration shows the calyx of the newly described one to be larger and the corolla smaller than the corresponding members in *Physostegia Virginiana*. The original specimens were collected many years ago in Louisiana. The one was gathered on prairies by Mr. Carpenter while the other is from Alexandria, collected by Dr. Hale.

EUPHORBIA OLIVACEA.

Perennial, olive green, glabrous. Stems solitary or several together, 2–7 dm. tall, simple or branched at the base; branches erect or ascending, forking above or topped by a 4-rayed umbel; leaves alternate below the umbel; blades leathery, oblong, obo-

vate-oblong or cuneate, 1-3 cm. long, obtuse or notched at the apex, with a stout midrib, sessile or short-petioled: involucre scattered along the slender branchlets, campanulate, with a truncate base about 1 mm. high, angled at maturity: glands transversely oblong, about 0.5 mm. broad; appendages ascending, white, 1 mm. long, orbicular-cuneate, minutely erose at the top.

In sandy soil, southern Mississippi. Summer.

Related to *Euphorbia apocynifolia* but the foliage is perfectly glabrous and the stems very rigid. The plants are conspicuous on account of the numerous leaves on the stem and the many small thick broad bracts scattered on the elongated branches of the inflorescence. A good character is furnished by the involucre; these are truncate at the base. I am not aware that this character exists in any other member of the group. The original specimens were collected by Prof. S. M. Tracy at Biloxi, Mississippi on July 15, 1894, nos. 2883 and 2885.

EUPHORBIA ERIOGONOIDES.

Perennial, deep green, glabrous. Stems several or many together, 1-3 dm. long, diffusely branched into a rounded head 1-3 dm. in diameter; branches very slender, zigzag, widely dichotomous, ultimate divisions nearly filiform: leaves opposite, above first fork, reflexed or deflexed; blades linear or linear spatulate, .5-1.5 cm. long, obtuse or acutish, entire, barely petioled: peduncles filiform, 3-8 mm. long at maturity: involucre campanulate with a rounded base, less than 1 mm. high, erect or ascending: glands reniform, about 0.5 mm. broad; appendages ascending, reniform-cuneate, white or pink, about 1 mm. broad, 0.5 mm. long, longer than the gland, some truncate, some cleft: capsules not seen.

In loose sand, eastern Georgia. Spring and summer.

A very characteristic species on account of its close resemblance to *Eriogonum cernuum* and some of its relatives. The stems are diffusely branched from the base and the branches thence widely dichotomous. The leaves at the nodes are reflexed or deflexed and often curved. The very numerous involucre are less than 1 mm. high, while the white or pink appendages are only about 0.5 mm. long and about 1 mm. broad. The small size of the members of the inflorescence and the characteristic habit separate it from all other species of *Tithymalopsis*. The original specimens were collected by the writer in the sands about Darien Junction, in eastern Georgia, June 25-27, 1895.

EUPHORBIA ZINNIIFLORA.

Perennial, dark green. Stems usually solitary, erect, 3–5 dm. tall, with a few ascending branches below the 3-rayed umbel, pubescent with short scattered hairs: leaves alternate except those subtending the umbel; blades narrowly linear-lanceolate, or nearly linear, 2–5 cm. long, mostly reflexed or deflexed, acute or rather obtuse, sparingly pubescent above or glabrate beneath, somewhat revolute, nearly sessile or with somewhat hairy petioles less than 1 mm. long: peduncles slender, erect, 1–3.5 cm. long, angled especially above: involucre campanulate, 1.5–2 mm. high, angled: glands oblong-reniform, fully 1 mm. broad; appendages spreading, white or pink, suborbicular or 4-sided, 3–3.5 mm. long, barely as broad, rounded or emarginate at the apex.

In sandy soil, Yellow River valley, Georgia. Spring.

While collecting in the Yellow River valley in middle Georgia during the spring of 1895, I encountered a curious looking *Euphorbia*, growing in the sands of the river swamp. The habit of the species is peculiar, the few branches of the main stem and the rays of the main umbel are terminated by several-rayed-umbels with narrow spreading leaf-like bracts. The rays of these ultimate umbels are filiform, or nearly so, and characteristically elongated. The leaves are conspicuous on account of their reflexed or deflexed position. As compared with *Euphorbia eriogonoides*, the involucre of this species are very large, sometimes measuring one centimeter across the appendages and closely resemble in aspect the heads of species of *Zinnia*. The body of the involucre differs from that of most other, if not all members of the subgenus *Tithymalopsis* in being broader than high.

EUPHORBIA PERGAMENA.

Biennial or perennial, glaucescent. Stems branched at the base; branches slender, wire-like, 0.5–1.5 dm. long, glabrous or nearly so, forking; leaves opposite; blades parchment-like, oblong or ovate, very oblique, 3–6 mm. long, obtuse, serrulate, minutely pubescent on both sides, conspicuously inequilateral, cordate or subcordate at the base, short-petioled: involucre campanulate, 1–5 mm. high, minutely pubescent, with a split on one side through which the pedicel protrudes: glands transversely oblong, purple or red-purple, variable in size, about 0.5 mm. broad; appendages white or pink, as long as the glands or longer, one much longer than the others, more or less uneven along the edges: capsules

about 1 mm. high, minutely pubescent: seeds less than 1 mm. long, faces transversely wrinkled.

In sand, peninsular Florida.

The specimens on which the above described species is founded were collected in peninsular Florida by both Dr. Garber and Mr. Simpson, and were both distributed under the name of a species to which they are rather remotely related and bear but slight resemblance. The nearest relative seems to be *Euphorbia prostrata*. The newly described species can easily be distinguished by the much stouter root and more numerous and wiry branches. The leaves are conspicuously parchment-like and not fleshy; in short, the plants belonging here have a dry and rigid texture as compared with the fleshy and flaccid herbage of their relatives.

The following specimens are referred here; Florida: Miami, November, 1878, *Garber*; Lemon City, March 2, 1892, *Simpson*, no. 523.

HYPERICUM APOCYNIFOLIUM.

A branching shrub 4-7 dm. tall with a red somewhat shreddy bark. Branchlets narrowly 4-winged: leaves bright green; blades oblong or slightly broadest near the middle, 2-4 cm. long, rounded or emarginate at the apex, rarely revolute, pale beneath, minutely punctate, more or less cuneate at the base, nearly sessile: flowers 3-5 in terminal cymes: sepals spatulate, elliptic or oval, 3-5 mm. long, fully one half as long as the petals, obtuse or acutish, persistent: petals yellow, oblong, 8-9 mm. long: capsules oblong-conic, 12-13 mm. long, acute: seeds cylindrical or slightly constricted about the middle, barely 2 mm. long, minutely but conspicuously reticulated.

In swamps, Arkansas and Texas. Summer.

Probably most if not all of the Texano-Arkansas *Hypericum nudiflorum* may belong to the above described species. *Hypericum apocynifolium* is related to *Hypericum nudiflorum* but it is rigidly distinct. The best diagnostic characters are to be found in the flowers, these are somewhat larger than those of the eastern relative. The sepals are fully one half as long as the petals, while the capsules are 12-13 mm. long, being of a narrower pattern and fully twice as large as those of the species with which it has been confused. My attention has recently been recalled to this species by specimens collected near Texarkana during the closing season.

The species was also collected in Arkansas many years ago by Dr. Leavenworth.

GAURA FILIFORMIS.

Perennial, finely canescent. Stems erect or ascending, 1–2.5 m. tall, widely and often diffusely branched above; branches very slender, sometimes nearly filiform: leaves numerous but not conspicuously so; blades linear to narrowly linear lanceolate, 2–10 cm. long, or shorter on the branches, acute or acuminate, rather sharply but remotely serrate or entire towards the inflorescence: spikes elongated and interrupted: calyx puberulent; tube 7–8 mm. long; segments longer than the tube: petals pink-purple, oblong with a narrowed base, about 7 mm. long, obtuse: filaments 5–6 mm. long: anthers 4 mm. high: style surpassing the filaments: fruit narrowly elliptic, 6 mm. long, sessile, canescent, faces slightly ridged.

In sandy banks, Arkansas and Louisiana. Summer and fall.

Related to *Gaura angustifolia*, but very much larger, commonly reaching a height of two and one half meters and copiously and diffusely branched throughout. The narrower acuminate almost entire leaf-blades, the closer pubescence, the pink-purple corollas and the smaller fruit all serve to separate the newly described species from *Gaura angustifolia*.

The specimens on which the species is based were collected by Mr. A. A. Heller, near Texarkana, Miller County, Arkansas, August, 1898, no. 4138. The species is also represented in the Herbarium of Columbia University by a specimen collected many years ago in Louisiana, the label accompanying the specimen contains the following record: "Prairies. Fel[ician]a and Op[elousas]. Sept. 5th. Wm. C[arpenter]."

VERBENA HALEI.

Annual, slender. Stems erect, 2–9 dm. tall, 4-angled, glabrous or strigillose above, branching near the top or rarely at the base: leaves strigillose, 3–10 cm. long; blades various, those of the basal and lower stem leaves oblong to ovate, irregularly toothed and incised, long-petioled, those of middle part of stem commonly broader, 1–2-pinnatifid, shorter petioled: upper ones sparingly toothed or entire: spikes slender; bracts shorter than the calyx, appressed: calyx becoming 3–3.5 mm. long, strigillose; teeth mucronate: corolla blue; tube about 3 mm. long; limb 6–7 mm. broad, segments notched: nutlets linear-oblong, about 2.5 mm. long.

In sandy soil, Indian Territory to Louisiana and Texas. Spring and summer.

Verbena Halei has the general habits of *Verbena officinalis* but differs from that species in both the leaves and inflorescence. The lower leaf-blades are usually less deeply lobed, often merely coarsely toothed, while the upper leaves or leaf-segments are conspicuously elongated and nearly entire or remotely toothed. The corollas are twice the size of those of *Verbena officinalis* and the narrow fruit often fully twice the length of that of the eastern relative. The following specimens belong here:

Louisiana: *Dr. Hale*, no. 245.

Texas: San Diego, 1885-86, *Miss Croft*, no. 119; Corpus Christi, 1894, *Mr. Heller*, no. 1419.

Indian Territory: Between Fort Cobb and Fort Arbuckle, 1868, *Dr. Palmer*, no. 242.

GERARDIA POLYPHYLLA.

Annual, smooth and glabrous or nearly so. Stems erect, 1-4 dm. tall, bushy; branches wire-like, ascending: leaves opposite, numerous; blades linear filiform or setaceous, 1-2.5 cm. long, acute, straight or somewhat curved, slightly revolute: pedicels filiform, spreading, 1-2 cm. long, surpassed by the leaves: calices 2-3 mm.; tubes turbinate; teeth triangular-subulate, one fourth as long as tube: corollas pink or pink-purple, less than 1 cm. long.

In sandy soil, Little Stone Mountain, Georgia. Summer and fall.

The species of *Gerardia* just described is related to *Gerardia setacea* Walt., but it is more delicate and all its members are smaller. All the plants that I have seen are conspicuously much branched and the small corollas and the large calyx-teeth which are fully one fourth as long as the turbinate tube easily separate the species from any forms of *Gerardia setacea* with which I am acquainted.

The original specimens were collected by the writer on Little Stone Mountain, DeKalb County, Georgia, in September, 1895. Specimens which without much doubt will have to be referred here have now been brought in by Mr. Heller from the vicinity of Texarkana, Arkansas, no. 4219. These are almost identical with the Georgia plants.

GERARDIA VIRIDIS.

Annual, slightly scabrous, drying green. Stems erect, 2–6 dm. tall, branching, sharply angled: leaves opposite or slightly scattered; blades narrowly linear, 1–2 cm. long, acute, revolute, scabrous along the edges, sessile or nearly so: pedicels ascending, 8–15 mm. long, as long as the leaves or shorter, slender: calices 4–5 mm. high; tubes turbinate to turbinate-campanulate; teeth acute, about one third as long as the tubes: corollas yellowish-pink, less than 1 cm. long; segments ciliate, truncate or barely emarginate.

In sandy soil, Arkansas to Louisiana. Summer and fall.

At least two species in addition to the type are passing under the name *Gerardia Skinneriana*. The one I have just separated in the above description can be easily recognized by the coarser habit, the larger and broader leaves and the long calyx-teeth; these form a strong contrast with the minute teeth of the calyx of *Gerardia Skinneriana*. Mr. Heller has collected excellent specimens of the species about Texarkana, Arkansas, during the past season, no. 4240. Dr. Hale found it many years a little further south at Alexandria, Louisiana.

SOLIDAGO HELLERI.

Perennial, robust. Foliage nearly glabrous: stems erect, 6–16 dm. tall, usually green mottled with purple, branched above into wide spreading panicles: leaves numerous; blades narrowly elliptic or oblong-elliptic, 3–10 cm. long, acute, serrate with appressed teeth at least above the middle, smooth and glabrous above, sparingly pubescent beneath, ciliate, sessile or nearly so above: racemes one-sided, slightly recurved; bracts linear or linear-spatulate: involucre cylindric, about 6 mm. high, spirally twisted; bracts glabrous, erect, firm, leathery, linear or linear-lanceolate, conspicuously decurrent on the peduncle: rays 2–4, yellow, inconspicuous, partly included; blades oblong, 1–1.5 mm. long.

In sandy woods, Arkansas.

Solidago Helli is related to *Solidago rugosa* and *Solidago ulmifolia*, possessing the general habit of the former and in the foliage characters nearest to the latter. It differs from both relatives in its peculiar heads; these members are supported on slender peduncles, which are often copiously furnished with delicate bracts. These bracts grade into those of the involucre proper, and, like

those of the involucre, are strongly spirally arranged, giving a conspicuous twist to the heads.

The plants on which the species is founded were collected by Mr. A. A. Heller, near Texarkana, Bowie County, Texas, September, 1898, no. 4188.

DOELLINGERIA SERICOCARPOIDES.

Perennial, deep green. Stem erect, 8–12 dm. tall, corymbosely branched above, finely ridged, purple or purple-mottled, glabrous to the ultimate divisions or near them; leaves numerous; blades firm, elliptic to lanceolate-elliptic, acute or slightly acuminate at the apex, somewhat scabrous above, glabrous and paler beneath or minutely pubescent on the nerves beneath, ciliate, narrowed into short petioles or nearly sessile: peduncles minutely pubescent: involucre cylindric-campanulate, about 4 mm. high, 2–2.5 mm. thick; bracts very sparingly pubescent, outer linear-lanceolate, inner linear, ciliate at the tip: rays white, 2–4, oblong, 5–6 mm. long: mature heads about 8 mm. high: achenes almost glabrous.

In low grounds, Arkansas and Texas. Fall.

The *Doellingeria* inhabiting the lower Mississippi valley is undoubtedly specifically distinct from all the recognized species. It was separated from related forms in Torrey and Gray's Flora of North America and recognized as a species by Schultz Bipontinus in the Meisner Herbarium. However, as far as I can learn, it has never been given a name. From the other species of the genus it may be distinguished by the more rigid habit and the firmer texture of the leaves, but the most characteristic distinction lies in the inflorescence; this is quite suggestive of the species of *Sericocarpus* in the ultimate clusters, but the branches of the inflorescence are conspicuously elongated. The small heads which are only about half the size of those of its relatives furnish a crucial character. The original specimens were collected by Mr. A. A. Heller, near Texarkana, Miller County, Arkansas, in August and September, 1898, no. 4137.

ASTER CONTINUUS.

Perennial, deep green. Stems erect, pubescent with short up-curved hairs, simple below, much branched above, slightly flexuous: leaves spreading; blades 2–4 cm. long, somewhat fiddle-shaped, acute, shallowly serrate or nearly entire, ciliolate, scabro-pubescent

on both sides, sessile, clasping at the base : inflorescence ample ; branches spreading, slender, closely pubescent, furnished with many approximate bract-like scales : heads showy : involucre turbinate, short before anthesis, elongated to 1 or 1.5 cm. at maturity : bracts numerous, linear or nearly so, acute, erect or slightly spreading, with narrow dark green tips, conspicuously decurrent on the peduncles : rays 12-15, violet, nearly linear, about 1 cm. long : achenes pubescent.

In dry soil, Arkansas. Fall.

Aster continuus is one of the more conspicuous species of the genus. Its relationship is with *Aster patens*. Differences in habit and foliage are much subornate to the very peculiar involucre. Up to about the time the rays expand these members are turbinate, but after the rays expand and the head matures the involucre become conspicuously obconic and greatly elongate. The bracts of the involucre have often a conspicuously spiral arrangement and gradually pass into those of the elongated peduncles. The original specimens were gathered by Mr. A. A. Heller, near Texarkana, Arkansas, in September, 1898, no. 4283.

III. THE PARONYCHIACEOUS GENUS FORCIPELLA.

Unfortunately the name FORCIPELLA which I lately associated with a genus of PARONYCHIACEAE was used in the family ACANTHACEAE* since the publication of the Kew Index and before my adoption of it. This being the case, I cannot do better than associate the name of the late Professor Lewis R. Gibbes, of Charleston, South Carolina, the discoverer of such conspicuous species as *Aster mirabilis* and *Tsuga Caroliniana*, and founder of an important herbarium,† with this interesting genus :

GIBBESIA.

GIBBESIA RUGELII (Chapm.).

Siphonychia Rugelii Chapm. Fl. S. States 47. 1860.

Paronychia Rugelii Shuttl.; Chapm. Fl. S. States 47. As synonym. 1860.

Forcipella Rugelii Small, Bull. Torr. Club, 25: 150. 1898.

* See Engler and Prantl, Nat. Pfl. Fam. 4 : Abh. 3, b. 343.

† This herbarium is now incorporated in the herbarium of the New York Botanical Garden.